



WORK PLAN

EMERGENCY RAPID RESPONSE SERVICES

**VASQUEZ/1-70 SITE
(aka NORTH DENVER SOILS SITE)
DENVER, COLORADO**

Prepared for

**U.S. Environmental Protection Agency
Region VIII
999 18th Street
Denver, Colorado 80202-2405**

September 1998

**ENVIRONMENTAL CHEMICAL CORPORATION
999 18th Street, Suite 2350
Denver, Colorado 80202**

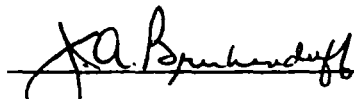
WORK PLAN

EMERGENCY RAPID RESPONSE SERVICES

NORTH DENVER SOILS SITE DENVER, COLORADO

September , 1998

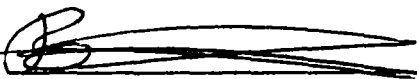
Reviewed By:



ECC Sr. Response Manager

10/19/98

Date



EPA On-Scene Coordinator

10/29/98

Date

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	Location	1
1.2	Background	1
2.0	SCOPE OF WORK	2
2.1	CET/ECC Responsibilities	2
2.2	General Requirements	3
3.0	RESIDENTIAL REMOVALS	5
3.1	Preservation and Prevention	6
3.2	Site Preparation	6
3.3	Site Sampling	6
3.4	Property, Resources, and Quality of Life Protections	6
3.5	Site Surveying	7
3.6	Demolitions	9
3.6.1	Trees and Shrubs	9
3.6.2	Structures Removal	10
3.7	Contaminated Soil Removal	11
3.8	Prevention of Contaminant Migration	11
3.8.1	Site Area Management	11
3.8.1.1	Exclusion, Contamination Reduction and Support Zones	11
3.8.1.2	Transportation Support Zones	12
3.8.1.3	Central Support Zone	12
3.8.1.4	Repository Support Zone and CRZ	12
3.9.2	Control of Surface Water	12
3.9.3	Excavations	13
3.9.4	Transportation	14
3.9.4.1	Waste Material to Waste Areas	14
3.9.4.2	Haul Route	14
3.10	Confirmation Sampling	14
3.11	Restoration of Properties	15
3.11.1	Exterior Restorations	15
3.11.1.1	Backfill and Final Grading	15
3.11.1.2	Revegetation	15
3.11.1.3	Concrete and Asphalt	15
3.11.1.4	Above Ground Structures	16
3.11.2	Interior Restoration	16
3.12	Temporary Access	16
3.12.1	Temporary Access - Work Hours (Residents)	17
3.12.2	Temporary Access - Off-hours (Residents)	17

4.0	WASTE CONSOLIDATION	18
4.1	General	18
4.2	Dust Control	21
5.0	QUALITY ASSURANCE/QUALITY CONTROL	35
6.0	KEY PERSONNEL	35

LIST OF FIGURES

Figure 1 Organizational Chart

LIST OF TABLES

Table 1 Survey Markings

1.0 INTRODUCTION

The communities of Elyria and Swansea in northern areas of the City of Denver were some of the first settlements in the Platte River Valley and they have an extensive history that goes back to the 1850's. Immediately west of them, starting in the 1870's, the community known as Globeville became a center for smelting and ore benefaction that continued through the 1950's. Inefficient smelting techniques used by early smelters left large amounts of metals, including lead and arsenic, in the waste slag. Additionally, these primitive smelting operations typically produced stack emissions with elevated metal content. The heavy fallout of metal laden smelter dusts contaminated large areas around and downwind of the smelters, including the communities of Elyria and Swansea.

In 1997 and 1998, the State of Colorado's Department of Public Health and Environment (CDPH&E) and the EPA conducted sampling in these neighborhoods in order to assess the threat that the historic smelter dusts posed to human health and the environment. The resulting surface soil screening identified areas with lead and arsenic contamination at levels of concern.

1.1 Location

The locations in the neighborhoods where the initial excavations will take place are within an area bounded on the south by Interstate Highway 70 (I-70), on the east by Colorado Boulevard, on the west by Vasquez Boulevard, and on the north by 52nd Avenue. All are within the City and County of Denver.

1.2 Background

The US EPA issued a Delivery Order to the ERRS WEST contractor, CET Environmental Services, Inc., to provide labor, equipment and materials to respond to the excavation, transport, disposal, and restoration operations planned for the North Denver Soils Site. Environmental Chemical Corporation (ECC), Region VIII Teaming Subcontractor, was issued a Task Order from CET to provide the required resources for the emergency response.

2.0 SCOPE OF WORK

The primary objective of the Work is to remove the potential for human contact with contaminated soil by removing that soil and replacing it with clean uncontaminated soil. Specifically, the scope of work for this operation includes the following tasks:

1. Selective site clearing, including the removal of selected improvements per the property drawings. Trees, shrubs, sprinkler systems, and other landscaping improvements will be removed and disposed of appropriately.
2. Removing the contaminated soil from the 21 separate, private, and publicly owned properties. Excavation will be carried out per the project drawings or until action levels are reached. The contaminated soil will be hauled and placed in a designated location at the contractor staging area.
3. Refilling the excavated sites with uncontaminated materials consisting of earth fill and topsoil to the depths of the excavated materials.
4. Restoring the landscape including fencing, sprinkler systems, planting of trees and shrubs, laying sod, and replacing structures that were removed or salvaged, or installing new structures if needed.

Due to the presence of occupied residential properties within the work site, the CET/ECC Team will ensure that each site is isolated and secured during removal, transportation, and decontamination activities. An Exclusion Zone (EZ) at the work areas, and the Contamination Reduction Zone (CRZ) and Support Zone (SZ) at the main entrance to the work site will be properly established and maintained to prevent any cross-contamination. The restoration activities are being undertaken by ECC and the CET/ECC landscape architect. The CET/ECC Team will be responsible for assuring that landscaping and site restoration activities are in compliance with the project specifications.

2.1 CET/ECC Responsibilities

The CET/ECC Team will provide labor, equipment, and construction management services and support to the United States Environmental Protection Agency (EPA) Region VIII Emergency Response Branch (ERB) for removal/remedial activities at the North Denver Soils Site. The CET/ECC Team will provide the following site specific services:

- Be available for meetings with EPA and homeowners for access and scheduling;

- Development of AutoCAD drawings for estimated extent of the removal and placement, if necessary;
- Assist in preconstruction planning meetings with EPA and community;
- Provide management of daily cost tracking system (RCMS);
- Develop as-built drawings for specific construction activities;
- Provide weekly and monthly reports to the EPA OSC, as required;
- Develop the final construction reports;
- Provide survey controls for construction activity, as required;
- Provide closure reports, as-built drawings, and other administrative record support, as required.

2.2 General Requirements

A Rapid Response Action will be performed at the site that will address threats at high access areas to children and residential properties. Specifically, the following activities will be performed:

- Excavate lead and arsenic contaminated soils above action levels at the designated residential properties. The excavated properties will be restored to their “near original” condition by backfilling, revegetating, and other necessary repairs;
- Prepare project documents including a Work Plan and a Health and Safety Plan;
- Perform RCMS daily cost tracking;
- Provide technical services and support as required.

3.0 RESIDENTIAL REMOVALS

3.1 Preservation and Prevention

While excavations and demolitions remove contaminated material from each site, houses, other major structures, and improvements (trees, sidewalks, driveways, and other selected items) will remain throughout the remediation. These items will be noted and marked during the site surveying phase and will correspond exactly with the items identified in the specifications. Construction site barricades/fencing will be erected around items to be left during remediation to physically isolate them from the work site. If contaminants are to be excavated from the structures, crews will use shovels, trowels, brushes, etc. to remove the soils while employing preservation methods to maintain the viability of the flora. These methods include temporary relocation and storage, in-place packing and wetting, or non-disturbance.

3.2 Site Preparation

In preparation for the commencement of remedial actions, homeowners will be notified at least 24 hours before the survey team arrives. Relocation of outdoor pets will be addressed at this time. The survey team will review and gather all necessary information for each property to verify the accuracy of the drawings. ECC will supplement the drawings with descriptive narratives and property photographs. Items that will remain, such as roads, driveways, houses, large trees, and aboveground utilities will be verbally agreed upon by the Project Manager and the EPA OSC. Items which can be moved will be preserved in secure trailers or given to homeowners for safekeeping. Current physical conditions, measurements, and any existing damage to the items prior to the arrival of heavy equipment will be noted in daily quality control reports, or appropriate survey logs, and photographed. Records of surveying will be maintained in ECC's databases in the field office to document each property's condition prior to any construction activities.

3.3 Site Sampling

EPA's START Contractor will conduct all pre-excavation and confirmation sampling, as needed and directed by the EPA OSC.

3.4 Property, Resources, and Quality of Life Protections

The EPA, and START will coordinate homeowner planning activities. ECC will implement

these plans and agreements. All structures not scheduled to be demolished will be protected during the remediation phase. Safe work practices will be employed by experienced personnel to prevent mishaps to remaining structures or other items. Daily tailgate meetings will be held prior to demolition activities. Project Management, foremen, and surveyors will review the work plans for the day's work and applicable safety conclusions.

Land areas and/or structures will be reconstructed to EPA specifications. All ECC construction activities will be confined to the support, contamination reduction, and exclusion zones.

Trees and shrubs will not be injured, destroyed, removed, or cut without written authorization from the OSC. No ropes or cables will be attached to any existing trees for anchorages. If the OSC suspects that trees might be defaced, bruised, injured, or otherwise damaged by any equipment or operations, direction will be given to the staff to provide temporary protection of such trees by placing boards, planks, or poles around them. Any damaged trees will be appraised by the landscaper's horticulturist, and all properties will be inspected the following spring to insure that trees were not damaged during construction activities.

Non-indigenous material will not be allowed to enter and pollute any surface or groundwater in the project area. Vehicles and equipment will be lubricated or fueled in a bermed support area. All ECC personnel and subcontractors will comply with applicable federal, state, and local laws concerning pollution of surface and groundwater. Special measures will be taken to prevent chemicals, fuels, oils, greases, and bituminous materials from entering public waters. Water used in personnel and equipment washing will not be allowed to re-enter any stream, lake, or wetland. Decontamination water will be stored in drums on-site and analyzed prior to disposal.

In order to integrate construction activities into the daily activities of residents without any adverse or detrimental affects to daily life, consideration will be given to traffic control and other logistic methodologies. Such considerations include:

- limiting heavy equipment movements to one route without detours,
- limiting contractor traffic to off-peak periods as much as possible, and
- bringing only those pieces of equipment to a site that will be used within a short period of time from arrival.

3.5 Site Surveying

Prior to excavation and demolition activities, the site will have been characterized for lead in the soils, and each property will undergo a pre-mobilization survey to map the property and catalog property items. The SSHO or designee will ensure that proper lockout/tagout procedures are completed before any activity begins. Prior to initiating demolition activities, a three man team

will survey each site to verify the data provided in the specification drawings, mark and measure items scheduled for removal, examine the structural layout of the property, and determine the

existence of any potential demolition hazards. Care will be taken to ensure safe disassembly of structures and handling of debris.

The property surveying team will include the OSC, the ECC SSHO or designee and the contract surveyor who will take measurements and dimensions of the site, each structure/plant, and verify that the drawings reflect the particulars of each property. First, all structures which can remain on the property will be identified and tagged. Coordinating with the RM and OSC, the surveyors will assess the clearance of trees, shrubs, sprinkler systems, brick pad, wood deck and any other landscaping items which will require restoration following decontamination. In surveying each property site, a photographic record will also be maintained to document replacement of vegetation, debris and structures.

ECC will and check the dimensions necessary for are measurements and proper execution of the work required for by the drawings and specifications, and verify the accuracy of the dimensions and locations before starting any construction activity. Any discrepancies noted in location, size, dimension, depth, clearances, type, etc. will be submitted in writing to the OSC. Any structures, concrete, asphalt, plants, or other items not required to be removed or remediated shall be protected by ECC. Barricades, walkways, lighting, and postings will be provided for protection of the public.

To avoid confusion and streamline clearing and demolition activities, the surveyors will mark items with surveyor's tape or biodegradable, lead-free paint according to the instructions in the specification drawings. The following colors will refer to a specific direction:

Table 1 - Survey Markings

Color Marker	Demolition Response
Red	Remove and do not replace
Yellow	Remove and replace with same type or better quality materials
Blue	Refer to specifications for particular directions
Green	Green tape, paint, or fencing will signify that the object will not be disturbed

The survey will include a delineation of other site necessities specifically:

- safe access and movement within work areas, walkways, alleys, and other passage ways;
- illumination (as required);
- vehicle turn space and muddy/wet areas around excavation site; and,
- location and identification of utilities and high-voltage lines.

Local utility companies will be notified prior to any site demolition to identify, mark, and temporarily shut-off any utility lines within the excavation areas. The SSHO will perform lockout/tagout procedures as necessary. The location of underground utilities or installations will be verified for each yard prior to beginning excavation. These will include sewer lines, telephone, gas and water lines, and electrical connections. ECC will maintain engineering drawings which indicate location of service lines and the means of their control.

If directed by OSC, ECC will prepare a second order topographic survey drawing. The map will be prepared after vegetation, debris and structural clearing is completed. This map will be the reference for determining removal calculations, facilitate development of the as-built drawings, and where applicable, to verify the required depth of excavation shown on the drawings.

3.6 Demolitions

3.6.1 Trees and Shrubs

Tree removal will be performed only under the direction of the OSC. A notch and backcut will be used in felling trees over five (5) inches in diameter. The SSHO will be aware of the following before and during any approved tree removal:

- Removal of items which may interfere with felling
- Wind force and direction
- Location of other people
- Situation of electrical lines and hazards

Stumps, roots, embedded cobbles, and boulders will be cleared prior to excavation and added to the waste repository in a separate stockpile from soil and tailings. This procedure will avoid any interference with the final placement of the soils/tailings into a permanent location, and allows the OSC to examine the non-soil additions to determine whether they will be stipulated as hazardous or non-hazardous.

3.6.2 Structures Removal

ECC will remove structures only when directed by the OSC. Structures (such as sheds, patios, fencing, etc.) will be disassembled, cut, uprooted, and otherwise removed by hand. Any suspected asbestos containing material (ACM) such as transite panels, wallboard, fibrous material, or pipe insulation will be immediately reported to the Response Manager (RM). The RM will not allow work to continue in the area until the material can be analyzed by a person trained in asbestos identification. If the material is found to contain asbestos, proper precautions will be taken when removing the material. Personnel will don the appropriate personal protective equipment to remove ACM. The piping, fencing, and general structural debris will be placed in dump trucks for transportation to the waste pile. Chippers or crushers can be used to reduce volumes and process materials for disposal.

- **Pavement:** Bituminous pavement, asphalt, and/or concrete to be removed will be demolished using a sawzall, walk behind concrete saw, or cutoff saw. These items will be considered contaminated.
- **Piping:** Piping found underground, such as sprinklers and/or storm drains, will be cut with hacksaws or appropriately-sized electric or gasoline powered saws. Any sewer piping or miscellaneous debris to be removed will be placed in a designated area of the waste repository, approved by the OSC. ECC will excavate the piping and debris using an appropriate size hydraulic excavator. If there is a possibility that the piping could contain asbestos, it will be immediately reported to the RM. The suspect material will not be disturbed until it is analyzed by a person trained in asbestos identification.
- **Fencing:** Fencing throughout the site will be removed by cutting poles, foundations, etc. at or just below ground level. Other fencing or stationary items (such as basketball poles) will be removed or dismantled in a safe, efficient manner.

The SSHO will be responsible for insuring that hazardous and non-hazardous materials are segregated for disposal.

3.7 Contaminated Soil Removal

Excavations will begin when each site is accepted as cleared by the RM or OSC and will be performed as indicated in the specification drawings. Care will be taken to minimize the impact of the excavation on the homeowners.

Temporary access to all properties will be maintained at all times during remediation. Economic and time considerations will be implemented scheduling of work. Total quality assurance and quality control will be exercised during the course of the project. The RM, SSHO, and OSC will evaluate the proposed plans before starting the remediation work.

3.8 Prevention of Contaminant Migration

3.8.1 Site Area Management

The site will be physically arranged to facilitate the remedial objectives. The site will be divided into several work areas for the project; removal, restoration, repository, decontamination, and transportation support. Movement of personnel and equipment between the areas will be controlled. These controls will keep the contaminants within specified areas on-site reducing the potential for contaminant to migration. ECC will establish and maintain three control zones. The zones will be clearly marked and designated as the support zone, contaminate reduction zone, and exclusion zone.

3.8.1.1 Exclusion, Contamination Reduction and Support Zones

The excavation of contaminated soil will be performed in the exclusion zone (EZ). The contamination reduction zone (CRZ) is the area between the contaminated area and the clean area, where equipment and personnel are decontaminated after leaving the EZ. Each excavation area will have a centralized support zone (SZ) with adequate supplies for traffic control, decontamination, safety and health, emergency response, worker breaks, PPE and other appropriate support equipment.

Vehicles, equipment, and materials brought into the EZ will remain in the EZ until no longer necessary to the work area, or until properly decontaminated. All contaminated vehicles, equipment and materials will be cleaned in the CRZ prior to leaving the area. Any item taken in the exclusion zone will be assumed to be contaminated and will be carefully inspected and/or decontaminated before the item leaves the area. All personnel will enter and exit the EZ through the CRZ. The SZ will be located near the CRZ.

3.8.1.2 Transportation Support Zones

Trucks transporting contaminated soils from the site will primarily receive loads in this area and will not enter the exclusion zone. If the trucks are required to move into the EZ, all vehicles, equipment, and personnel will leave the truck loading zone through the CRZ.

3.8.1.3 Central Support Zone

The central support zone at the staging area will include the office trailer, and the crew trailer. No equipment or personnel will be permitted to enter the support zone from the exclusion zone or truck loading zone without passing through the decontamination stations. Eating, smoking, and drinking will only be allowed in this zone. No special clothing or protective equipment will be required in the support zone.

The central support zone will also contain the following project specific structures:

- Maintenance Lot/ Mechanic Area
- Central Storage Trailers
- Equipment Lot

3.8.2 Control of Surface Water

Storm water will be controlled and diverted around the contaminated areas within the exclusion zones into the existing drainage systems. ECC will utilize mobile pump trucks to remove water collected at the waste storage piles, removal zones, or contaminated restoration work areas. This water will be placed into storage tanks and characterized for disposal. Based on the results, ECC will either:

- Submit the water quality test results to the USEPA, or other appropriate regulatory agency, for approval to utilize the water for dust control, equipment decontamination, or street cleaning activities;
- Route the water to a metered sewage discharge line for processing through an approved POTW system (pending permit compliance).

ECC will work with all regulatory parties to assure that any water requiring treatment is processed until action levels for water quality are met.

ECC will provide the materials and the equipment to perform all work necessary to facilitate the control of the surface liquid and to protect the remediation work from damage by water. Using temporary control measures ECC will be responsible for preventing surface water from running into the contaminated area of the exclusion zones and contaminated liquid from running off-site. ECC will not work during rain days to eliminate cross-contamination into mud.

Storm water and surface runoff on a completely excavated but uncovered portion of the properties will be diverted to a corner area of the property. Dikes for this purpose will be constructed using on-site material to control surface water runoff from cross-contaminating other properties. If necessary, portable pumps will be used to remove any ponded water prior to

covering the excavation. Clean waters will be pumped to storm sewers.

3.8.3 Excavations

Dust abatement is a fundamental method in eliminating contaminant migration during excavation. All excavations, embankments, stockpiles, haul roads, permanent and temporary access roads, waste staging and storage areas, stabilization materials handling areas, and other work areas may cause a dust hazard to others.

Water sprinkling, chemical surfactant treatment, and plastic will be employed to control dust. Sprinkling will be repeated to keep the disturbed area damp at all times. Water trucks designed for this task or water hoses and sprinklers will be used. Dust control will be performed as the work proceeds and whenever a dust nuisance or hazard occurs. Each excavated property may be sprayed with dust suppressant.

3.8.4 Transportation

All mobile equipment will be operated by authorized personnel only. ECC will ensure that all operators are fully trained. All ECC personnel will be OSHA 40 hour trained (Hazardous Waste operations training as per 29 CFR 1910.120).

3.8.4.1 Waste Material to Waste Areas

Contaminated material will be excavated and loaded from the temporary truck loading site established near the work site. This method will focus on minimizing public contact by establishing public thoroughfare rerouting, a "buffer zone" for contingency and monitoring purposes, and restricted access corridors.

All trucks arriving at the temporary loading site to remove the hazardous material will be inspected. The SSHO or his representative will be responsible for the implementation and documentation of these inspections.

3.8.4.2 Haul Route

A traffic flow diagram will be presented to the OSC prior to commencing operations. ECC will determine additional haul roads if needed. Haul trucks will be directed according to predetermined routes to the staging areas. Hauling route and times will be proposed in the Traffic Control Plan and coordinated with the appropriate entities.

3.9 Confirmation Sampling

Following excavation of contaminated materials, confirmatory soil samples may be collected by START (if directed by the OSC) to determine if the clean-up requirement levels were achieved. ECC can assist in staking the grid layout for the confirmatory sampling.

3.11 Restoration of Properties

3.11.1 Landscape Restorations

Once excavation activities are completed, ECC crews and the Landscape Contractor will return to the property to administer property restorations. No restoration will deviate from Government drawings and specifications without written notification from the OSC. As each restoration is completed, a series of inspections will commence, ranging from pre-acceptance inspections to final placement inspections. Appropriate documentation will accompany these inspections.

3.11.1.1 Backfill and Final Grading

The excavation area will be examined for any conditions detrimental to continuing restoration, (i.e., if excavation areas are muddy or frozen). Backfill material will be inspected by the SSHO and/or RM for absence of debris or rocks over six inches and for material that will provide sufficient and stable support. Inspections will also determine whether fill is too wet for immediate installation. All sub-soil and top soil will be inspected in this way, with comments recorded in daily quality control reports. Stockpiles of soil may be established on site.

Backfill will be placed in eight (8) inch lifts. Soil will be compacted and uniformly graded and sloped to the existing contour of the land. To prevent ponding, soil will be graded to allow runoff to drain away from structures.

3.11.1.2 Revegetation

Topsoil will be of a natural, clear, friable material possessing the same characteristics of the indigenous soil.

Sod will be installed, or grass seeding, fertilizing, and mulching as directed by the OSC. The SSHO will inspect the operations upon completion of final grading to determine appropriate revegetation operations in accordance with contract specifications. All planting will be timed to avoid destruction of the new biota during the winter months. The site will be inspected periodically during and after reseeding to insure adequate vegetative cover is established. The inspection period will continue until the OSC is satisfied. Homeowners will be given written guidance on how to establish and care for newly installed sod and other plants. All sod and plants will be guaranteed by the landscaping contractor for one year with proper maintenance

performed by the homeowner.

3.11.1.3 Concrete and Asphalt

Concrete and asphalt installation will be performed only as directed by the OSC per the specification drawings. The RM, JRM, SSHO, and/or the OSC will approve all forms and reinforcement (if used). Delivery of concrete and asphalt will be scheduled in order to prevent any delays in placing the material after mixing. Concrete will be not be placed in a subgrade that is frozen or overly wet. All material will be mixed, deposited, and tested to pass ASTM requirements and the approval of the OSC.

ECC's Field Superintendent will provide inspections of all concrete work performed at the site, reviewing:

- underground and/or embedded items inspected for operability, placement and location alignment;
- construction materials are used which meet contract specifications;
- testing in accordance with the contract specifications. All inspection results will be included in the appropriate daily quality control report.

3.11.1.4 Above Ground Structures

If structures which were removed and disposed of during site clearing they will be assembled after the landscaping is completed as specified in the contract drawings, or under official notification from the OSC. At each site where structures are to be built, the site supervisor will review the specifications for the structure, including the description, surface finish of the structure. Upon completion, these structures will be inspected for quality of work and durability, with comments recorded in the daily quality control report.

3.12 Temporary Access

ECC will follow internal standard operating procedures for providing temporary access ways to all residents, homeowners, general public or dwellers during and after work hours and also securing the site, equipment and materials during the length of the project. Temporary access ways will also be constructed by ECC during remediation for gaining access to inaccessible areas of the properties from neighboring properties.

Temporary exits to and from the properties will be provided at all times until the remediation and landscaping is done. The temporary access ways will not disturb any excavated areas. All excavated areas will be barricaded until the clean earth and top soil have been replaced. All

residents will be provided with a detailed daily remediation schedule. The property owners and dwellers will be notified of the access ways and emergency exits by bright signs, exit signs, caution tape etc. They will be informed how to contact the ECC RM or SSHO at all times in cases of emergency. ECC will institute a contingency plan which will allow communications between the property owners, residents or dwellers and the ECC crews at site to react efficiently in an emergency.

3.12.1 Temporary Access - Work Hours (Residents)

During work hours ECC will maintain an access way for all properties under remediation. ECC will provide an emergency exit for each property during the remediation activities. For example if the ECC crew is working at the North end of a property, an access way will be provided at the farthest end of the property, i.e. the very South of the property. Temporary pathways will be installed such as temporary access ramps with guardrails on either ends.

3.12.2 Temporary Access - Off-hours (Residents)

Temporary access during off-hours will be maintained at all the properties which are being remediated and which will require access way after hours. The property sites will be secured using barrier tapes, barriers, caution tapes, and educating the residents of the risks involved with the excavation.

4.0 WASTE CONSOLIDATION

4.1 General

Wastes will not be stockpiled onsite. Contaminated soils will be taken directly offsite as the removals proceed.

4.2 Dust Control

During the movement of the contaminated material dust control measures will be maintained. ECC will use water tankers with power spray units for dust control and a spray wash sprinkler for dust abatement when loading the soil. The dust concentration will be controlled within safe hygienic limits. The dust abatement systems will be tested periodically to ensure their effectiveness. This will reduce cross-contamination at the site.

5.0 Quality Assurance/Quality Control

Quality Assurance/Quality Control (QA/QC) programs for remediation projects are essential to providing consistent guidance, standards, methods, and procedures for all operations. QA objectives will be well documented for a complete project record. The QC methods which are used to accomplish the QA objectives include project reporting, reviews, and inspections.

The QA/QC program team will consist of the Senior Response Manager, the Senior Field Superintendent, and the Site Safety & Health Officer (SSHO). The QA/QC program team will include oversight of health and safety, subcontractor management, dust abatement, and contaminated soil stockpile construction and management. The QA/QC program will utilize an inspection schedule for all site activities as follows:

- *Preparatory Inspections* conducted prior to any construction/site activities. This inspection will include meetings with individual homeowners, and tenants, prior to work on their properties to establish their goals and criteria for activities.
- *Initial Inspections* conducted during task start-up of work activities.
- *Placement Inspections* conducted following each site restoration activity.
- *Follow-up Inspections* conducted on a daily basis for all site activities.
- *Final Inspections* conducted with a EPA OSC for final approval of each residential property or project work product, to include resident. Written sign-off form signed by the OSC and the resident.

QC inspections will also include examination of streets and sidewalks for evidence of any contaminated material or damage caused by construction activities. Any visible damage or evidence of contamination will be logged along with the supporting photographic documentation.

6.0 KEY PERSONNEL

Senior Response Manager -	James Brenkendorff
Junior Response Manager/ Site Safety and Health Officer -	Lloyd McKissick
Program Management -	Bruce Wilson/Raghu Arora
Transportation & Disposal-	Jerry Wade

FIGURES